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IEEE CNF	IEEE Conference Proceeding
IEE CNF	IEE Conference Proceeding
IEEE STD	IEEE Standard

- A cache-aware scheduling algorithm for embedded systems**
 Luculli, G.; Di Natale, M.
Real-Time Systems Symposium, 1997. Proceedings. The 18th IEEE
 2-5 Dec 1997
 Page(s): 199-209
 Digital Object Identifier 10.1109/REAL.1997.641282
Summary: The paper presents a methodology for scheduling real time tasks in embedded systems where the cache miss costs are static at design time and does not change at execution time (static systems) and where the cache miss costs are static compared to the execution time.
AbstractPlus | Full Text: [PDF](#) IEEE CNF
- A software tool for the timing analysis of embedded software**
 Luculli, G.; Sangiovanni-Vincentelli, A.
Electrotechnical Conference, 2000. MELECON 2000, 10th Mediterranean
 Volume: 2 2000
 Page(s): 754- 757 vol.2
 Digital Object Identifier 10.1109/MELCON.2000.880043
Summary: The presence of real-time software modules which interact with specific hardware architectures in embedded applications. New methods and tools are needed for program analysis and the validation of these analyses.
AbstractPlus | Full Text: [PDF](#) IEEE CNF
- Analysis of DSP-kernel software by implicit cache simulation**
 Luculli, G.; Sangiovanni-Vincentelli, A.
Engineering of Computer Based Systems, 2001. ECBS 2001. Proceedings. Eighth Annual IEEE International Workshop on the
 2001
 Page(s): 282-288
 Digital Object Identifier 10.1109/ECBS.2001.922434
Summary: We introduce a new approach to performance analysis of DSP-kernel software, based on high-level called implicit cache simulation. The method can take into account any kind of instruction cache as well as data cache.
AbstractPlus | Full Text: [PDF](#) IEEE CNF
- An ISA-retargetable framework for embedded software analysis**
 Luculli, G.
Engineering of Computer-Based Systems, 2003. Proceedings, 10th IEEE International Conference and Workshop
 7-10 April 2003
 Page(s): 183- 190
 Digital Object Identifier 10.1109/ECBS.2003.1194798
Summary: Industry requires new advanced tools and methodologies for the design of complex system-on-chip. In STMicroelectronics we developed an innovative retargetable technology for the analysis and optimization of system-on-chip.
AbstractPlus | Full Text: [PDF](#) IEEE CNF
- Retargetable tools for embedded software**

Luculli, G.

[EUROCON 2003. Computer as a Tool. The IEEE Region 8](#)

Volume: 1 22-24 Sept. 2003

Page(s): 52- 56 vol. 1

Summary: Today, the advent of the multi-million transistor chip offers the opportunity to provide more integratio into a single silicon die. This is both a clear advantage to improve existing products and a hard challenge to i

[AbstractPlus](#) | Full Text: [PDF](#) [IEEE CNF](#)

6. **Efficient and effective simulation of memory maps for system-on-chip**

Luculli, G.

[Engineering of Computer-Based Systems, 2004. Proceedings, 11th IEEE International Conference and Work](#)
24-27 May 2004

Page(s): 242- 247

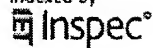
Digital Object Identifier 10.1109/ECBS.2004.1316705

Summary: The design of complex system-on-chip (SOC) requires new methods and tools for the optimization software which is executed on ever more complex hardware architectures. The tuning of the memory subsystem is difficult due to th.....

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specification for machine instruction with class

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oriented language, if the **definition** of **class** A includes. another **class** B, the member ...
scriptions of various aspects of a **machine** (**instruction** syn- ...
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Glossary

See Java **Specification** Request. JVM. See Java virtual **machine**. large object (LOB). The **class** of SQL data type that is further divided into Internal LOBs and ...
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1 [Designing computer systems with MEMS-based storage](#)



Steven W. Schlosser, John Linwood Griffin, David F. Nagle, Gregory R. Ganger

 November 2000 **ACM SIGOPS Operating Systems Review**, **ACM SIGARCH Computer Architecture News**, **Proceedings of the ninth international conference on Architectural support for programming languages and operating systems ASPLOS-IX**, Volume 34, 28 Issue 5, 5

Publisher: ACM Press

Full text available: pdf(439.06 KB)

 Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

For decades the RAM-to-disk memory hierarchy gap has plagued computer architects. An exciting new storage technology based on microelectromechanical systems (MEMS) is poised to fill a large portion of this performance gap, significantly reduce system power consumption, and enable many new applications. This paper explores the system-level implications of integrating MEMS-based storage into the memory hierarchy. Results show that standalone MEMS-based storage reduces I/O stall times by 4-74X over ...

2 [Designing computer systems with MEMS-based storage](#)



Steven W. Schlosser, John Linwood Griffin, David F. Nagle, Gregory R. Ganger

November 2000 **ACM SIGPLAN Notices**, Volume 35 Issue 11

Publisher: ACM Press

Full text available: pdf(439.06 KB)

 Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

For decades the RAM-to-disk memory hierarchy gap has plagued computer architects. An exciting new storage technology based on microelectromechanical systems (MEMS) is poised to fill a large portion of this performance gap, significantly reduce system power consumption, and enable many new applications. This paper explores the system-level implications of integrating MEMS-based storage into the memory hierarchy. Results show that standalone MEMS-based storage reduces I/O stall times by 4--74X ove ...

3 [Modeling and performance of MEMS-based storage devices](#)



John Linwood Griffin, Steven W. Schlosser, Gregory R. Ganger, David F. Nagle

 June 2000 **ACM SIGMETRICS Performance Evaluation Review**, **Proceedings of the 2000 ACM SIGMETRICS international conference on Measurement and modeling of computer systems SIGMETRICS '00**, Volume 28 Issue 1

Publisher: ACM Press

Full text available: pdf(892.07 KB)

 Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

MEMS-based storage devices are seen by many as promising alternatives to disk drives. Fabricated using conventional CMOS processes, MEMS-based storage consists of thousands of small, mechanical probe tips that access gigabytes of high-density, nonvolatile magnetic storage. This paper takes a first step towards understanding the performance characteristics of these devices by mapping them onto a disk-like metaphor. Using simulation models based on the mechanics equations governing the device ...

4 Specifying representations of machine instructions



Norman Ramsey, Mary F. Fernández

May 1997 **ACM Transactions on Programming Languages and Systems (TOPLAS)**,
Volume 19 Issue 3

Publisher: ACM Press

Full text available: pdf(320.62 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We present SLED, a specification language for Encoding and Decoding, which describes, abstract, binary, and assembly-language representations of machine instructions. Guided by a SLED specification, the New Jersey Machine-Code Toolkit generates bit-manipulating code for use in applications that process machine code. Programmers can write such applications at an assembly language level of abstraction, and the toolkit enables the applications to recognize and emit the binary representations u ...

Keywords: compiler generation, decoding, encoding, machine code, machine description, object code, relocation

5 Using MEMS-based storage in computer systems---device modeling and management



Bo Hong, Scott A. Brandt, Darrell D. E. Long, Ethan L. Miller, Ying Lin

May 2006 **ACM Transactions on Storage (TOS)**, Volume 2 Issue 2

Publisher: ACM Press

Full text available: pdf(649.15 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

MEMS-based storage is an emerging nonvolatile secondary storage technology. It promises high performance, high storage density, and low power consumption. With fundamentally different architectural designs from magnetic disk, MEMS-based storage exhibits unique two-dimensional positioning behaviors and efficient power state transitions. We model these low-level, device-specific properties of MEMS-based storage and present request scheduling algorithms and power management strategies that exploit ...

Keywords: MEMS-based storage, power management, request scheduling

6 MEMS-based integrated-circuit mass-storage systems



L. Richard Carley, Gregory R. Ganger, David F. Nagle

November 2000 **Communications of the ACM**, Volume 43 Issue 11

Publisher: ACM Press

Full text available: pdf(577.78 KB) html(41.51 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

7 Automatic checking of instruction specifications



Mary Fernández, Norman Ramsey

May 1997 **Proceedings of the 19th international conference on Software engineering**

Publisher: ACM Press

Full text available:  [pdf\(2.07 MB\)](#)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

Keywords: application generators, machine-code toolkit, specification testing


8 A case for redundant arrays of inexpensive disks (RAID)



David A. Patterson, Garth Gibson, Randy H. Katz

June 1988 **ACM SIGMOD Record , Proceedings of the 1988 ACM SIGMOD international conference on Management of data SIGMOD '88**, Volume 17 Issue 3

Publisher: ACM Press

Full text available:  [pdf\(1.20 MB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Increasing performance of CPUs and memories will be squandered if not matched by a similar performance increase in I/O. While the capacity of Single Large Expensive Disks (SLED) has grown rapidly, the performance improvement of SLED has been modest. Redundant Arrays of Inexpensive Disks (RAID), based on the magnetic disk technology developed for personal computers, offers an attractive alternative to SLED, promising improvements of an order of magnitude in performance, reliability, ...

9 Real-world applications: papers: On evolving buffer overflow attacks using genetic programming



Hilmi Güneş Kayacik, Malcolm Heywood, Nur Zincir-Heywood

July 2006 **Proceedings of the 8th annual conference on Genetic and evolutionary computation GECCO '06**

Publisher: ACM Press

Full text available:  [pdf\(301.22 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this work, we employed genetic programming to evolve a "white hat" attacker; that is to say, we evolve variants of an attack with the objective of providing better detectors. Assuming a generic buffer overflow exploit, we evolve variants of the generic attack, with the objective of evading detection by signature-based methods. To do so, we pay particular attention to the formulation of an appropriate fitness function and partnering instruction set. Moreover, by making use of the intron behavior ...

Keywords: intrusion detection systems, linear genetic programming, mimicry attacks

10 High-level views on low-level representations



Iavor S. Diatchki, Mark P. Jones, Rebekah Leslie

September 2005 **ACM SIGPLAN Notices , Proceedings of the tenth ACM SIGPLAN international conference on Functional programming ICFP '05**, Volume 40 Issue 9


Publisher: ACM Press

Full text available:  [pdf\(176.18 KB\)](#)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper explains how the high-level treatment of datatypes in functional languages—using features like constructor functions and pattern matching—can be made to coexist with *bitdata*. We use this term to describe the bit-level representations of data that are required in the construction of many different applications, including operating systems, device drivers, and assemblers. We explain our approach as a combination of two language extensions, each of which could potentially ...



Keywords: bit manipulation, bitdata, bitfields, data representation, pattern matching, polymorphism, qualified types, views

- 11 The role of lexico-semantic feedback in open-domain textual question-answering 
Sanda Harabagiu, Dan Moldovan, Marius Paşca, Rada Mihalcea, Mihai Surdeanu, Răzvan Bunescu, Roxana Gîrju, Vasile Rus, Paul Morărescu
July 2001 **Proceedings of the 39th Annual Meeting on Association for Computational Linguistics ACL '01**

Publisher: Association for Computational Linguistics

Full text available:  pdf(112.79 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

This paper presents an open-domain textual Question-Answering system that uses several feedback loops to enhance its performance. These feedback loops combine in a new way statistical results with syntactic, semantic or pragmatic information derived from texts and lexical databases. The paper presents the contribution of each feedback loop to the overall performance of 76% human-assessed precise answers.



- 12 Posters: Acquisition and maintenance of constraints in engineering design 
 Suraj Ajit, Derek Sleeman, David W. Fowler, David Knott, Kit Hui
October 2005 **Proceedings of the 3rd international conference on Knowledge capture K-CAP '05**

Publisher: ACM Press

Full text available:  pdf(95.33 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The Designers' Workbench is a system, developed by the Advanced Knowledge Technologies (AKT) consortium to support designers in large organizations, such as Rolls-Royce, by making sure that a design is consistent with the specification for the particular design as well as with the company's design rule book(s). Currently, to capture the constraint information, a domain expert (design engineer) has to work with a knowledge engineer to identify the constraints, and it is then the task of the know ...

Keywords: ConEditor, application conditions, constraints, maintenance

- 13 Machine-adaptable dynamic binary translation 
 David Ung, Cristina Cifuentes
January 2000 **ACM SIGPLAN Notices , Proceedings of the ACM SIGPLAN workshop on Dynamic and adaptive compilation and optimization DYNAMO '00**, Volume 35 Issue 7

Publisher: ACM Press

Full text available:  pdf(1.23 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Dynamic binary translation is the process of translating and optimizing executable code for one machine to another at runtime, while the program is "executing" on the target machine.

Dynamic translation techniques have normally been limited to two particular machines; a competitor's machine and the hardware manufacturer's machine. This research provides for a more general framework for dynamic translations, by providing a framework based on specifications of machines that ...

Keywords: binary translation, dynamic compilation, dynamic execution, emulation, interpretation

- 14 Using MEMS-based storage in computer systems---MEMS storage architectures 
Bo Hong, Feng Wang, Scott A. Brandt, Darrell D. E. Long, Thomas J. E. Schwarz



February 2006 **ACM Transactions on Storage (TOS)**, Volume 2 Issue 1

Publisher: ACM Press

Full text available: [pdf\(472.59 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

As an emerging nonvolatile secondary storage technology, MEMS-based storage exhibits several desirable properties including high performance, high storage volumic density, low power consumption, low entry cost, and small form factor. However, MEMS-based storage provides a limited amount of storage per device and is likely to be more expensive than magnetic disk. Systems designers will therefore need to make trade-offs to achieve well-balanced designs. We present an architecture in which MEMS dev ...

Keywords: MEMS-based storage, cost-performance, economic lifetime, hybrid storage devices, maintenance strategies, storage enclosures

15 Interposed proportional sharing for a storage service utility



Wei Jin, Jeffrey S. Chase, Jasleen Kaur

June 2004 **ACM SIGMETRICS Performance Evaluation Review , Proceedings of the joint international conference on Measurement and modeling of computer systems SIGMETRICS '04/Performance '04**, Volume 32 Issue 1

Publisher: ACM Press

Full text available: [pdf\(339.02 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper develops and evaluates new share-based scheduling algorithms for differentiated service quality in network services, such as network storage servers. This form of resource control makes it possible to share a server among multiple request flows with probabilistic assurance that each flow receives a specified minimum share of a server's capacity to serve requests. This assurance is important for safe outsourcing of services to shared utilities such as Storage Service Providers. Our appr ...

Keywords: differentiated service, fair sharing, multiprocessor scheduling, performance isolation, proportional sharing, quality of service, storage services, utility computing, weighted fair queuing

16 Interface to architecture: integrating technology into the environment in the Brain



Opera

Maggie Orth

August 1997 **Proceedings of the conference on Designing interactive systems: processes, practices, methods, and techniques**

Publisher: ACM Press

Full text available: [pdf\(1.41 MB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)

Keywords: architecture, collaboration, design, environment, furniture, interface, opera, physical interface, sensor, theater

17 TDL: a hardware description language for retargetable postpass optimizations and analyses

Daniel Kästner

September 2003 **Proceedings of the second international conference on Generative programming and component engineering GPCE '03**

Publisher: Springer-Verlag New York, Inc.

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index](#)

Full text available:  [pdf\(433.80 KB\)](#)[terms](#)

The hardware description language TDL has been designed with the goal to generate machine-dependent postpass optimizers and analyzers from a concise specification of the target processor. TDL is assembly-oriented and provides a generic modeling of irregular hardware constraints that are typical for many embedded processors. The generic modeling supports graph-based and search-based optimization algorithms. An important design goal of TDL was to achieve extendibility, so that TDL can be easily i ...

18 Technical correspondence: Retargetable cross compilation techniques: comparison and analysis of GCC and Zephyr



Dai Guilan, Tian Jinlan, Zhang Suqin, Jiang Weidu, Dai Jun
June 2002 **ACM SIGPLAN Notices**, Volume 37 Issue 6

Publisher: ACM Press

Full text available:  [pdf\(571.95 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#)

Both GCC and Zephyr are representative compiler infrastructures. The paper explores the basic questions that need to be resolved to develop compilers for the support of multiple source languages and targets analyses and compares their architectures and key retargetable cross compilation techniques, summarizes the merits and shortcomings, respectively, and draws a conclusion that the Zephyr infrastructure has the advantage over GCC to an extent.

Keywords: GCC, compiler infrastructures, cross compilation, intermediate representations, machine descriptions, zephyr

19 Optimising hot paths in a dynamic binary translator



David Ung, Cristina Cifuentes
March 2001 **ACM SIGARCH Computer Architecture News**, Volume 29 Issue 1

Publisher: ACM Press

Full text available:  [pdf\(890.10 KB\)](#) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

In dynamic binary translation, code is translated "on the fly" at run-time, while the user perceives ordinary execution of the program on the target machine. Code fragments that are frequently executed follow the same sequence of flow control over a period of time. These fragments form a hot path and are optimised to improve the overall performance of the program. Multiple hot paths may also exist in programs. A program may choose to execute in one hot path for some time, but later switch to another ...

Keywords: binary translation, dynamic compilation, dynamic execution, run-time profiling

20 Optimization of custom MOS circuits by transistor sizing

Andrew R. Conn, Paula K. Coulman, Ruud A. Haring, Gregory L. Morrill, Chandu Visweswariah
January 1997 **Proceedings of the 1996 IEEE/ACM international conference on Computer-aided design**

Publisher: IEEE Computer Society

Full text available:  [pdf\(68.85 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)
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Optimization of a circuit by transistor sizing is often a slow, tedious and iterative manual process which relies on designer intuition. Circuit simulation is carried out in the inner loop of this tuning procedure. Automating the transistor sizing process is an important step towards being able to rapidly design high-performance, custom circuits. JiffyTune is a new circuit optimization tool that automates the tuning task. Delay, rise/fall time, area and

power targets are accommodated. Each (weig ...

Keywords: Circuits, transistor sizing, optimization, simulation, gradients.

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